DEENDAYAL PORT AUTHORITY

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Office of the Executive Engineer (E)
Ground Floor, Nirman Building,
New Kandla – Kachchh,

No.: EL/WK/ 2898 **Date: 04/12/2025.**

EXPRESSION OF INTEREST

EXPRESSION OF INTEREST [EOI] for "Construction of toilet blocks at New Port Colony, New Kandla"

(This Notice is issued only to elicit Expression of Interest from the parties interested in the work and does not constitute any binding commitment from the Deendayal Port Authority to proceed with the work or invite any or all the parties in the subsequent bidding process. The Open Tenders will be issued subsequently.)

Executive Engineer (Electrical), DPA invites Expression of Interest for the work of "Construction of toilet blocks at New Port Colony, New Kandla" from the reputed firms from those who have executed similar work in Government/public sectors and other leading private organizations. The Expression of Interest (EOI) documents containing details of Scope of Work and Technical Specifications are enclosed herewith.

The interested firms are requested to submit their expression of interest for the said work in BOQ format as enclosed at Annexure I. The completed EOI (Expression of Interest) shall be submitted to the office of the undersigned on or before 19/12/2025.

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Executive Engineer (Electrical)
Deendayal Port Authority

"Schedule B"

Sr. No.	Description of Items	Qty	Rate	Unit	Amount
1	Supply at Site 1.1KV grade LT XLPE Cable steel armored aluminum conductor cable, Cross linked Polyethylene (XLPE),FRLS, insulated, PVC sheathed, armoured power cables for effectively earthed systems of approved make and manufacturer as per relevant IS and as per Tech Specification No. :-01				
a)	4C x 95 Sq mm.	1500		Mtrs	
b)	4C x 70Sq mm	800		Mtrs	
c)	4C x 35Sq mm.	500		Mtrs	
d)	4C x 4Sq mm	200		Mtrs	
2	Laying of 3.5/4.0 Core LT armored aluminum conductor XLPE cable of 1.1KV grade of the following type as per as per technical Specification no 2				
	a) Laying of cable in RCC trench as per technical Specification no 2(a)	200		Mtrs	
	b) laying of cable through exaction in all type of Soil as per technical specification no 2(b).	500		Mtrs	
	c) Laying of cable on Wall / Truss / Structure as per technical Specification no 2(b).	500		Mtrs	
	d) Laying of cable in half round RCC pipe of 6" internal dia as per technical specification no 2(c).	1200		Mtrs	
	e) Laying of Cable through horizontal boring (16") in RCC Road /Rail/Jetty/RCC surface by providing HDPE pipe of suitable size as per technical specification no 2(d).	500		Mtrs	
3	Supply of following type of Distribution Boards as per Technical Specification No. 3				
	a) 4Way TPN DB (8+12) IP 43 with metal door (SHDB)	4		No	
4	Fixing of following type of Distribution Boards as per Technical Specification No. 4				
	a) 4Way TPN DB (8+12) IP 43 with metal door (SHDB)	4		No	
5	Supply of following type of MCBs as per Technical Specification No.05				
	a) 25/32 /40A DP MCB with 10kA Breaking Capacity in 'C' Series.	24		No	
	b) 40 A TPN MCB with 10kA Breaking Capacity in 'C' Series	04		No	

	c) 63 A TPN MCB with 10kA Breaking Capacity in 'C' Series	04		No	
6	Fixing of following type of MCBs as per Technical Specification No.06 a) 25/32 /40A DP MCB with 10kA Breaking Capacity in 'C' Series b) 40/63 A TPN MCB with 10kA Breaking Capacity in 'C' Series	 24 8		 No No	
7	Providing & fixing following concealed wiring for single phase sub-circuit from the main switch /meter.DBs / MCBs to the switch board as per Technical Specification No.7 a) with 2 x 2.5 sq.mm. copper conductor (single phase and neutral). b) with 2 x 4 sq.mm. copper conductor (single phase and neutral)	 220 140		 Mtrs Mtrs	
8	Providing and Fixing concealed wiring for light/tube/bell point with PVC insulated single core standard copper conductor wire as per Technical Specification No.8. a. light point with 1.5 sq.mm. copper conductor.	180		No	
9	Providing and Fixing concealed wiring for FAN point with PVC insulated single core standard copper conductor wire & step-cut electronic fan regulator as per Technical Specification No.9.	8		No	
10	Providing and fixing concealed wiring for 5/6 A X250 Volt plug point as per Technical Specification no. 10	8		No	
11	Providing and fixing 5 pin 5/6 A X250 Volt half plug point as per Technical Specification no. 11	20		No	
12	Providing and fixing concealed wiring for 20A, A.C point as per Technical Specification no. 12.	16		No	
13	Supply at site following type of BLDC fan, or Brushless DC Fan energy-efficient ceiling fan with all accessories as per Tech Spec no 13. a) 1200 mm sweep ceiling fan.	16		No	
14	Fixing of following type of supplied BLDC fan, or Brushless DC Fan energy-efficient ceiling fan with all accessories as per Tech Spec no 14 a) 1200 mm /1400mm sweep ceiling fan.	16		No	
15	Supply of exhaust fan of following type & size as per Technical Specification No. 15 a) 225mm sweep	44		No	
16	Fixing of exhaust fan of following type & size as per Technical Specification No. 16 a) 225mm sweep	44		No	

17	Supply of following Energy Efficient LED Tube Light fixture Complete accessories as per Tech Spec No. 17. a) 36/ 40Watt LED Tube light fixture.	150		No	
18	Fixing of following Energy Efficient LED Tube Light fixture Complete accessories as per Tech Spec No. 18. a) 36/40 Watt LED Tube light fixture.	150		No	
19	Supply of 120Watt LED energy efficient street light fixture with Complete accessories for fixing on entrance of the toilet block with proper size of bracket per technical specification no 19.	10		No	
20	Fixing of 120Watt LED Street Light Luminaries with all accessories as per technical specification no 20.	10		No	
21	Supply of 20Watt LED Bulk head fixture with Complete accessories for fixing on entrance of the toilet block with proper size of bracket per technical specification no 21.	40		No	
22	Fixing of 20Watt LED Bulk head fitting on the wall with all accessories as per technical specification no 22.	40		No	
23	Supply, Installation, testing & commissioning of Maintenance free Earthing system comprising of 25 mm dia. 3 mtr long earthing electrode of low carbon steel electrode with 250 microns copper coating + carbon based conductive back fill compound & copper Cl strip on DTC of 25 x 6 mm with termination on panel interlocking with existing earthing system etc and as per technical specification no 23.	8		Cop Job	
24	Supply, Laying, connecting of Copper / G.I strip as per technical Specification no 24 a) G. I Strip of Size 40 x 6 mm.	80		Mtr	
25	Supply, Laying, connecting of GI Wire Connecting earth station to the equipment as per Technical Specification No 25	100		Mtr	
				TOTAL	

(In words Rupees _____-
_____ only)

(NOTE: The rates should be inclusive of all taxes, duties, fees, cess etc and all incidental charges; but exclusive of GST)

Signature & Seal of Contractor

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Executive Engineer (E)
Deendayal Port Authority

Name of Work :- "Construction of toilet blocks at New Port Colony, New Kandla"

TECHNICAL SPECIFICATIONS & SCOPE OF WORK

1.0 GENERAL:

1.1 All equipment and material shall be designed manufactured and tested in accordance with the latest applicable IEC standard.

1.2 Equipment and material conforming to any other standard, which ensures equal or better quality, may be accepted. In such case copies of English version of the standard adopted shall be submitted.

1.3 The electrical installation shall meet the requirement of Indian Electricity Rules- 1956 as amended up to date; relevant IS code of practice and Indian Electricity Act-1910. In addition, other rules and regulations applicable to the work shall be followed. In case any discrepancy, the most stringent and restrictive one shall be binding.

1.4 The switchgear offered shall in general comply with the latest issues including amendments of the following standards but not restricted to them.

2.0 Scope of Work:-

The scope of work comprises of the following:

2.1 The work involves providing 3 Phase un- interrupted power supply to toilet block.

2.2 Supply, Laying & end termination of LT, 1.1 KV XLPE (E) armoured cable with aluminium conductor with ISI mark confirming to IS:7098 (Part-II) 1985 with up-to-date amendments and of approved make.

2.3 Earthing system for the entire work.

2.4 After successful completion of whole work in all respect to carry out testing and commissioning of the complete work to the entire satisfaction of Deendayal Port Authority.

2.5 The broad details of each item of the work are shown in the Schedule "B" attached herewith.

2.6 The Compact Substation designed shall confirm the following standard technical requirements. The Insulation values shall be enhanced considering the altitude of operation & Site atmospheric conditions.

SITE INFORMATION:

a. CLIMATIC CONDITIONS

The climate at Kandla is hot, humid, dusty and salt laden, conducive to rust. During summer, the temperature varies from 25 C to 44 C and in winter, which is mild from 10 C to 25 C. Kandla falls under scanty rainfall zone.

b. AIR TEMPERATURE

The minimum ambient air temperature at Kandla is 10C and the maximum ambient air temperatures observed are 45C (Outdoor) and 40C (Indoor).

c. WIND PRESSURE

Wind velocity of 25 to 60 Kmph is common on any day, specially during summer (March to September). The maximum wind velocity recorded is 180 to 200 Kmph. The direction and the average wind speed observed are as under

Period	*Direction*	*Average Speed*
*** October – March**	**North – East**	**10 Kmph**
*** April – May**	**South – East**	**20 Kmph**
***June– September**	**South – West }** **North – East }**	**60 Kmph**

d. SEISMIC FORCE

Kandla falls under Seismic Zone No – V, as per IS:1893.

e. RAINFALL

Rainfall in Kandla is very low, Between January and April, there is normally no rainfall. Rainfall mainly remains confined between June and August. During the remaining months, the rainfall is scanty. The average annual rainfall is around 200 mm only. However, there have been years when the rainfall was heavier, though such occasions are not common.

f. RELATIVE HUMIDITY.

The relative humidity at Kandla is of the order of about 70 %.

TECHNICAL SPECIFICATIONS

1 TECHNICAL SPECIFICATIONS FOR ITEM NO. 1

This includes supply at site 1.1 kV grade, following size of aluminum conductor XLPE insulated armoured cable confirming to IS: 7098 (Part-I) 1985 with up to date amendments and of approved make either of any following make POLYCAB/TORRENT/RPG ASIAN/ NICCO/ HAVELLS / UNISTAR/KEI with ISI mark. The cable shall have marking/embossing at the interval of every meter showing its progressive length.

The size of LT armoured XLPE aluminum conductor cable are:

a) 4 Core, 95 Sq.mm,

b) 4 Core, 70Sq.mm,

c) 4 Core, 35 Sq.mm,

d) 4 Core, 4 Sq.mm,

The contractor shall submit type test certificate at the time of supply of Cable at site. The type test certificate shall not be more than 3 years old. The rate shall be inclusive of all taxes (excluding GST), packing, forwarding, insurance, transportation, and unloading at site of work. During execution of the work any piece from the above cable's approx. 1-meter length will be taken for testing in NABL lab if the result is found unsatisfactory the entire lot of all the size of the cable will be rejected and the contractor has to supply new lot of different make which will be decided by EIC the work includes cost of transportation of sample piece & testing will be borne by the contractor.

2. TECHNICAL SPECIFICATIONS FOR ITEM NO. 02.

This includes laying & end termination of 1.1 KV grade XLPE armoured L.T cable of following size in proposed Steel Structure / wall /Beam / G.I pipe of suitable size or in a trench to be excavated by digging asphalted road, paved area covered with RCC Slabs, soiled area with stone etc including excavation of hard and soft soil as per the case may be and provided sand cushioning at the bottom and above the cable and by providing second class bricks including refilling of trench as mentioned below. The contractor shall not allow lay the cables without Jacks. While laying the cables, drums of cables shall be placed on the Jacks strictly for pulling the cables for laying to avoid any damage to cables.

1. **Laying of Cable**:
   The item includes laying of laying of LT armoured aluminum Conductor XLPE Cable of 11KV Grade (excluding supply of cable) single length / double length cable upto the size of 4 Core x 300 Sq. mm XLPE Insulated aluminum armoured cable of 1.1kV grade in the existing substation cable trench. The cable shall be laid after opening of trench by removing the MS chequered plates. If any unwanted cable or waste is available in the trench the contractor should clen the trench before laying the new cable and obtaining clearance in writing from Engineer-in- charge. After laying of the cable, cable trench shall be properly covered with existing chequered plates as per original. The item includes required material and labour as directed by Engineer in charge.

2. **In Hard/Soft Soil:** This includes laying of single length HT/LT armoured aluminum Conductor XLPE Cable of 11KV Grade (excluding supply of cable) through excavation in soft/hard soil. The trench to be excavated 0.3 mtr. wide 1.0 mtr. deep. The bed of 50mm of river sand shall be provided in the bottom of the excavated trench. The cable shall be laid over the bed of river sand. This includes providing & laying of bricks on both sides of cable lengthwise i.e. parallel to the cable and the gaps shall be filled by fresh river sand. The cable shall be covered by keeping two bricks over the side bricks shown in the sketch. The filling of the trench shall be done with the excavated stuff & should be watered and rammed properly to its original position. The excess excavated stuff shall be disposed off from the Site of work and separated in low laying area as directed. The same trench would be used to place two circuits (cables) side by side in horizontal fashion.

   The contractor shall provide heat shrinkable straight through joints of relevant size of approved make if the laying of cable shall be more than standard drum length. This includes all labour and material as directed by Engineer-in-Charge. Such cable joints shall be under the scope of work of the contractor at no extra cost or obligation from DPA. Such cable joining work is completely to be done by the contractor at his own cost. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST.

Sketch

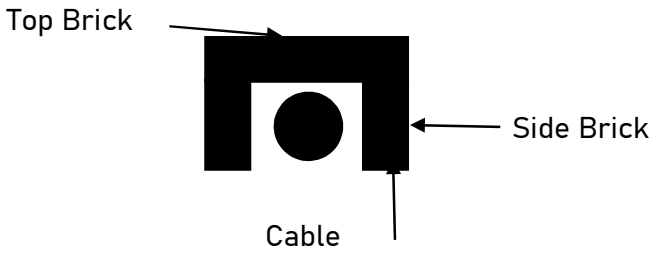


Fig 1.1

3. **Laying on walls, cable tray beam**: The work consists of laying LT cables on wall surface, beam, cable tray, etc. with suitable size of G.I. saddles/spacer of 2mm thick and shall be rigidly fixed on cemented wooden gutties or polymeric gutties at a distance of not more than 0.5 mtr interval. And wherever the cable is to be run on tray same shall be fixed with suitable size of clamp & hardware. This also

includes termination at both ends by required size of cable gland and with suitable size of lugs with all material and labour and as directed by Engineer-in-charge.

4. **In ½ Round RCC Hume pipe** The item includes laying of single length cable of size 4 core x 50 Sq.mm & 4C x 70Sqmm LT armoured aluminum Conductor XLPE Cable of 1.1KV Grade both in the ½ round RCC hume Pipe 6" I/D the half round pipe should be laid on the coarse sand. The cable shall be laid on the existing half round pipe as shown in the drawing after laying of cable the pipe should be filled with fine sand and covered with half round pipe.. At every approximately 15mtr length of there should be inspection chamber provided. The item includes required material and labour as directed by Engineer in charge.

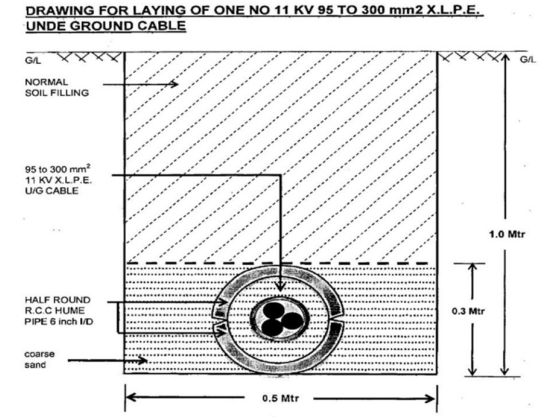


Fig 1.2

5. **Through HDPE Pipe under rail/road crossing/muddy area:** This includes making of Horizontal Directional Drilling of suitable dia including putting suitable diameter HDPE. HDPE pipe shall have strength of 10Kg/Sq.cm. Providing of HDPE pipe is also in the scope of contractor. Depth of horizontal boring shall be minimum 165 cm or according to construction of Road/Rail network/muddy area or as per direction of Engineer-In- Charge. Laying of HDPE pipe coupled by HDPE socket only after standard length in excavated trench / tunnel and also sealing of HDPE pipe ends by suitable cap at both end. After completion of boring job back filling & dressing of excavated trench to be carried out as per the original. The contractor shall arrange JCB machine for excavation, water for drilling, de-watering pump, HDD equipment at their own cost. The rates shall be inclusive of all material, required tools tackles and labour and as directed by Engineer-In-charge, but excluding GST. The two circuits (cables) to be laid in the separate HDPE pipe. side by side in horizontal fashion.

   This includes also includes passing of HT/LT cable through buried HDPE pipe. The pipe shall be sealed at both the end by suitable cap after the laying of cable in HDPE pipe. The rates shall be inclusive of all material, required tools tackles and labour, as directed by Engineer-In-charge, but excluding GST.

   This also includes end termination of cables at both the sides including cable glands etc. Termination and jointing kits for 1.1 KV grade XLPE cables shall be proven approved make. A loop of sufficient length shall be kept for future requirement. The contractor should provide cable route marker fixed on the M.S angle and properly grouted on the ground showing the size of the cable running.

   L.T cable termination & jointing shall be done strictly in accordance with kit manufacturer's instructions, drawing and as directed by Engineer-in-Charge. Cable jointer shall be qualified to carry out LT/ HT cable jointing and termination work. The work includes all material and labour as directed by Engineer-in-charge.

CABLE ROUTE AND JOINT MARKERS

(i) Permanent means of indicating the positions of joints on site should be provided. During the course of permanent reinstatement cable and joint markers, should be laid directly above the route of the cable and the position of the joint respectively.

(ii) Wherever it is not possible to place the marker directly over the cable route or joint the marker should be suitably placed near the cable route or joint on which the distance of the cable route or joint at right angles to and parallel to the marker should be clearly indicated.

(iii) The site requirement & position of fixing the markers will be decided by the Engineer-In-charge or his nominee.

(iv) The type of route marker & letters to be written on the route marker will be decided while execution by the Engineer-in-charge.

(v) Route marker should be visible and the pedestal should be buried underneath the ground firmly by providing CC foundation.

(vi) Route Marker of C.C. (1:2:4) 150x150x750 (in mm) Concrete Stone (DPT Mark with Approved Yellow Color Embedded in Earth atleast 300 mm below the ground Level at Approx. Distance 10 Meter or as directed by EIC

Cable laying, shall include the route marker, cable tagging, dressing, removing the old unused cable from the RCC Trench, appropriate size of glands & ferrule work as per requirement etc.

3. Technical specification no 03 for Item No. 3

This includes supply of double doors SP&N / TPN DB with IP42 degree of protection. The DB shall be made from special grade of CRCA sheet and powder coated. The DB shall be consisting with Insulated Busbar, Insulated IP2X neutral bars & earth bar DIN Rail and neutral link& Circuit identification labels & Blanking. The rates shall be excluding the cost of MCB as directed by Engineer-in-Charge.

a) This includes supply of 4 Way (8 Incomer + 12 Outgoing) double door TPN DB with IP42 degree of protection. The DB shall be made from special grade of CRCA sheet and powder coated. The DB shall be fitted with Busbar, DIN Rail and neutral link. The rates shall be excluding the cost of MCB as directed by Engineer-in-Charge.

4. Technical specification no 04 for Item No. 4.

This includes fixing & commissioning of supplied double door TPN DB on wall / structure as directed. The DB shall be fixed rigidly on wall through suitable size of nut bolts/anchor fasteners/cemented wooden gutties as directed. This includes necessary wiring, connections & earth linking with all material, labour tools & tackles as directed by Engineer-In-charge & While fixing the new distribution board old distribution board should be removed and in place of that new DB should be fitted.

5. Technical specification no 05 for Item No. 5

a) This includes supply of DIN Rail mounted 'C' Series **25/32/40 Amps**. X 240 Volts 50 Hz. **Double Pole MCB** with 10kA Breaking Capacity. The supplied MCB shall be conforming to IS: 8828:1996, IEC: 60898-1:1995. The terminals of MCB shall be serrated type.

b) This includes supply of DIN Rail mounted 'C' Series **40A** / **63 Amps**. X 415 Volts 50 Hz. **Triple Pole Neutral (TPN)** MCB with 10kA Breaking Capacity. The supplied MCB shall be conforming to IS: 8828:1996, IEC: 60898-1:1995. The terminals of MCB shall be serrated type.

6. Technical specification no 06 for Item No. 6

a) This includes fixing & commissioning of supplied DP MCB in existing TPN double door DB on wall / structure. The MCB shall be fixed on DIN Rail provided in existing DB. This includes necessary 1ϕ wiring, connections, distribution & earth linking of DB with all material, labour tools & tackles as directed by Engineer-In-charge.

b) This includes fixing & commissioning of supplied TPN MCB in existing TPN double door DB on wall / structure. The MCB shall be fixed on DIN Rail provided in existing DB. This includes necessary 3ϕ wiring, connections, distribution & earth linking of DB with all material, labour tools & tackles as directed by Engineer-In-charge.

7. Technical specification no 07 for Item No. 7

a) The item includes providing & fixing concealed wiring for single phase sub-circuit from the main switch /meter /DBs / MCBs to the switchboard with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire of size 2.5 sq. mm. for phase & neutral wire and 1.5 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe of size 25 mm Diameter of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grove shall be prepared by contractor on wall/ceiling as case may be & the conduit pipe shall be laid through prepared grove and in case of new construction the pipes shall be laid during reinforcement work. After laying of pipe the grove shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling. Complete work consists of necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

b) The item includes providing & fixing concealed wiring for single phase sub-circuit from the main switch /meter /DBs / MCBs to the switchboard with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire of size 4.0 sq. mm. for phase & neutral wire and 1.5 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe of size 25 mm Diameter of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grove shall be prepared by contractor on wall/ceiling as case may be & the conduit pipe shall be laid through prepared grove and in case of new construction the pipes shall be laid during reinforcement work. After laying of pipe the grove shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling. Complete work consists of necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

8. Technical specification no 08 for Item No. 8

The item includes providing & fixing concealed wiring for light/tube/bell point from switchboard with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire of size 1.5 sq. mm. for phase & neutral wire and 1.0 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe of size 20 mm Diameter of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grove shall be prepared by contractor on wall/ceiling as case may be & the conduit pipe shall be laid through prepared grove and in case of new construction the pipes shall be laid during reinforcement work. After laying of pipe the grove shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling. The work also includes providing & fixing of Bell Push/Flush type SP switch 6A x 250V semi-modular Anchor Nova type or equivalent with ISI mark and to meet specifications & 3 plate Ceiling Rose/Angle Holder made from polycarbonate on suitable size of PVC box with cover. The PVC box shall be embedded properly in

the wall and the switches shall be fixed on cover of the embedded box. The complete work consists necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

9. Technical specification no 09 for Item No. 9

The item includes providing & fixing concealed wiring for fan point from switchboard with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire of size 1.5 sq. mm. for phase & neutral wire and 1.0 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe with of size 20 mm Diameter of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grove shall be prepared by contractor on wall/ceiling as case may be & the conduit pipe shall be laid through prepared grove and in case of new construction the pipes shall be laid during reinforcement work. After laying of pipe the grove shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling. The work consists providing & fixing of Flush type SP switch 6A x 250V semi-modular Anchor Nova type or equivalent with ISI mark and to meet specifications, Step cut electronic fan regulator with rotary steps & 3 plate Ceiling Rose made from polycarbonate on suitable size of PVC box with cover. The PVC box shall be embedded properly in the wall and the switches shall be fixed on cover of the embedded box. The complete work consists necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

10. Technical specification no 10 for Item No. 10

The item includes providing & fixing concealed wiring for plug point with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire of size 1.5 sq. mm. for phase & neutral wire and 1.0 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe of size 20 mm Diameter of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grove shall be prepared by contractor on wall/ceiling as case may be & the conduit pipe shall be laid through prepared grove and in case of new construction the pipes shall be laid during reinforcement work. After laying of pipe the grove shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling The work consists providing & fixing of Flush type SP switch 6A x 250V semi-modular Anchor Nova type or equivalent with ISI mark and to meet specifications, and 2 in 1 socket 6A x 250V made from polycarbonate on suitable size of PVC box with cover. The PVC box shall be embedded properly in the wall and the switch & Socket shall be fixed on cover of the embedded box. The complete work consists necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

11. Technical specification no 11 for Item No. 11

The item includes providing & fixing half point in existing switch board with Flame Retardant, 1100 Voltage grade, single core stranded copper conductor wire of size 1.5 sq. mm. for phase, neutral & earth. The work consists providing & fixing of Flush type SP switch 6A x 250V semi-modular Anchor Nova type or equivalent with ISI mark and to meet specifications, and 2 in 1 socket 6A x 250V made from polycarbonate on existing switchboard. The complete work consists necessary wiring connections and earth linking with all materials and labour as directed by Engineer-in-charge.

12. Technical specification no 12 for Item No. 12

The item includes providing & fixing concealed wiring for Power point with Flame Retardant, 1100

Voltage grade, single core stranded copper conductor wire of size 4.0 sq. mm. for phase & neutral wire and 2.5 Sq.mm continuous stranded copper conductor wire for earth to be laid through PVC Round Pipe of size 25 mm Diameter of Medium Mechanical Strength (MMS) type and other accessories such as Tee, junction box, inspection bends, elbow etc. of approved make. The proper size of grove shall be prepared by contractor on wall/ceiling as case may be & the conduit pipe shall be laid through prepared grove and in case of new construction the pipes shall be laid during reinforcement work. After laying of pipe the grove shall be closed with mixture of cement & sand and to match with existing surface of wall/ceiling. The work consists providing & fixing of 5 in 1 combined unit suitable for 20A & 10A with switch, socket, fuse & indicator with ISI mark. The PVC box of suitable size shall be embedded properly in the wall and the combined unit shall be fixed on embedded PVC box. The complete work consists necessary wiring connections and earth linking at both the ends with all materials and labour as directed by Engineer-in-charge.

13. Technical specification no 13 for Item No. 13

Supply of 1200mm sweep & 1400mm sweep BLDC fan, or Brushless DC Fan energy-efficient ceiling fan that uses a brushless DC motor. These fans are known for their low power consumption, typically around 28-35 watts, and quiet operation compared to traditional induction motor fans. Key specifications include a 1200mm/1400mm sweep size, a 5-star energy rating, and a remote control for speed and on/off functions.

Key Specifications of BLDC Fans:

- **Motor Type:** Brush less DC (BLDC).
- **Power Consumption:** Typically, 28-35 watts.
- **Sweep Size:** Common sizes include 1200mm (48 inches)./1400mm
- **Rated Voltage:** 230V AC.
- **Rated Frequency:** 50 Hz.
- **Speed Control:** Remote control with multiple speed settings.
- **Air Delivery:** Ranges from 220-230 m^3/min.
- **Noise Level:** Typically, around 65 dBA.
- **Energy Efficiency:** 5-star energy rating, offering significant energy savings.
- **Other Features:** Remote control, timer functions, and potentially features like "night mode" with variable air delivery.
- **Make:**- ORIENT/ ATOMBERG/BAJAJ/CROMPTON/USHA/HAVELLS.

14. Technical specification no 14 for Item No. 14

This includes fixing & commissioning of supplied ceiling fan with all accessories in existing hook including necessary wiring and connection from nearest point / Ceiling rose through PVC flexible copper conductor wire and earth linking etc. The rotary step cut electronic regulator shall be fixed

and screwed rigidly on switch board including wiring and connection etc. with all material and labour as directed by Engineer-in-charge.

15. Technical specification no 15 for Item No. 15

This includes supply of BLDC wall mounting fan energy efficient BLC motor with blade sweep 16 inch (400mm) having 3 no's blades, working on input voltage of 220/250 Volts A.C. 50HZ Single phase, with power consumption 40W, Air delivery minimum 75CMM, RPM of the fan 1500, having swinging and three step speed control & option with Remote operation with in-built speed regulator operated by pull cord. The guards of fan shall be metal powder coated. Good quality material of blade should be PVC. The Color of the fan should be Black or Brown Classic Look with minimum 2 years' replacement warranty.

The complete detail brochure along with the fan model and make to be submitted to check the technical details and accessories such as remote along with cells, screws & nuts for fixing. The rates shall be inclusive of all the of miscellaneous charges excluding GST on fan as directed by Engineer-in-Charge

MAKE: ORIENT/ ATOMBERG/BAJAJ/CROMPTON/USHA/HAVELLS

16. Technical specification no 16 for Item No. 16

This includes fixing & commissioning of supplied exhaust on existing exhaust hole so that discharge of exhaust air can be done easily. However if exhaust hole is not provided, it is to be done by contractor. The fan shall be fixed with wooden frame and grouting of the frame of fan is to be done by suitable size of anchor fastener bolts, and by providing metallic mesh/louvers as directed to other side so that birds can be restricted in the passage. This includes connections with 3 core flexible copper cable from nearest source of supply & necessary connections & earth linking with all material and labour and as directed by Engineer-In-Charge.

17. Technical specification no 17 for Item No. 17

Supply at site environmental friendly energy efficient 40 Watt tube fixture. The fixture should be of low power consumption & having high efficiency as per technical description given below :

Technical Requirement for LED 40 Watt tube fixture

Sr no	Description	Technical Specification required
1	Power Consumption	**40 /50Watts**
2	Length:	Typically 4 feet (1.2 meters)
3	Lumen Output:	Can range from 4000 to 5200 lumens
4	Luminous Efficacy:	110-130 lumens per watt, depending on the model
5	Color Temperature (CCT):	Often 6500K, which is a cool white or daylight color
6	Input Voltage:	180-270V AC

7	Color Rendering Index (CRI):	Typically >80, indicating high-quality light that accurately shows colors
8	Lifespan:	Approximately 50,000 hours
9	Power Factor (PF):	Greater than 0.95 for efficient power usage
10	Body Material:	Common materials include high-quality polycarbonate (PC) and aluminum
11	Ingress Protection (IP) Rating	Ratings vary by model, with IP33 being common for indoor use and IP55 for more durable applications
12	Surge protection: .	Built-in protection, frequently rated at 2.5 kV or 4 kV, guards against power surges
13	Diffuser:	Polycarbonate material to diffuse light and reduce glare
	Additional Features	
14	LED Make:	Can include brands like Edison, Everlight, OSRAM, NICHIA, or CREE
15	Application:	Suitable for both residential and commercial (office, household) use
16	Surge Protection:	Built-in protection against voltage spikes, such as 4KV or 5KV
17	Energy Efficiency:	Provides brighter illumination than fluorescent tubes while consuming less energy
18	Make of LED Tube	Philips /Wipro / Bajaj / Crompton with 1 year replacement Guarantee

18. Technical specification no 18 for Item No. 18

This includes fixing & commissioning of supplied 20-22W LED Tube Light luminaries on wall/ceiling at suitable height on cemented wooden gutties as directed, and connections with 3 core flexible copper cable from nearest source of supply/ceiling rose & necessary connections with all material and labour and as directed by Engineer-In-charge.

19. Technical specification no 19 for Item No. 19

This includes supply of 120W LED pre-wired Street Light Fitting with constant current LED driver. Operating voltage for luminaries shall be 230 Volts 50Hz. A.C. supply. The rate shall inclusive of all taxes, excise duty, VAT, packing, forwarding, insurance, transportation and unloading at site of work etc. The luminaries shall be comprises with following Technical particulars.

Sr.	DESCRIPTION	MINIMUM VALUE
01	Input Power	**120W**
02	Input voltage AC	90-300 V
03	Input Frequency	50 HZ +/-1 HZ
04	Life	50,000 glow hrs.
05	Inter-changeability	Suitable for pole pipe bracket
06	Total Harmonic Distortion	<15% maximum
07	Working Temperature	-20°C to +50°C
08	Working Humidity	10% to 90% RH
09	Temperature	6500° K
10	Colour rendering index **(CRI):**	Typically ≥70, sometimes >80 Ra, providing good color accuracy.
11	Lumens / Watt	130 Lum/W
12	Finishing	Excellent with Powered Coating
13	Power factor	Not less than 0.90
14	Warrantee	**Minimum 02 year**
15	Heat sink	Good thermal management System should be provided & LED must be mounted on heat Sink conductive aluminium bars With suitable large surface area by Means of fines to dissipate the heat to ambient air.
16	Beam angle	Beam angle 75 ° x 135 °
17	Lamp Housing	Pressure Die cast aluminium housing
18	LENS Material	Convex Lens (Polycarbonate cover/PMMA) 65mm dia
19	Ingress protection Level	IP 67
20	Power efficiency	Min. 80%
21	Road viewing angle Light Source	**Horizontal 120 Degree & Vertical 70 Degree SMD LED array with lens**
22	Guarantee / Warrantee	**Minimum 03 year**
23	Makes	Phillips / Bajaj / Wipro / Crompton
24	Certification preferred/essential	LM79/ LM 80
25		

20. Technical specification no 20 for Item No. 20

This includes fixing & commissioning of supplied Street Light luminaire with lamp suitable for 1x20w LED Luminary, 230 Volts 50Hz. A.C. supply. The fitting shall be fixed at existing wall/ GRP/ FRP bracket/ G.I Bracket. This includes providing & fixing of suitable size of bracket made from GI pipe with 2mm thick clamps. The supplied fitting shall be fixed on GI pipe bracket or nipple to be provided while fitting the luminary as decided by EIC. This also includes necessary wiring & connections with 3 core flexible copper cable from nearest source of supply & necessary earth linking connections with all material, labour tools & tackles as directed by Engineer-In-charge.

21. Technical specification no 21 for Item No. 21

This includes supply of 20W LED Wall mounted Bulk Head Fitting suitable to fit 20w LED bulbs. Protection: IP 54, Surface mounting Made up of die-cast aluminum alloy body with external weatherproof coating. It has a heavy glass bowl structure that is enclosed by wire mesh to cover

the light bulb and protect from damage. Die Cast Aluminum Body. Suitable for outdoor purpose. make: Crompton/ Bajaj/Philips/havells

The rate shall inclusive of all taxes, excise duty, VAT, packing, forwarding, insurance, transportation and unloading at site of work etc.

22. Technical specification no 22 for Item No. 22

This includes fixing & commissioning of supplied 20w LED Wall mounted Bulk Head Fitting along with 20w LED bulb, 230 Volts 50Hz. A.C. supply. The fitting shall be fixed at existing wall.. The supplied fitting shall be fixed on the wall properly with proper gutties & Screw as decided by EIC. This also includes necessary wiring & connections with 3 core flexible copper cable from nearest source of supply & necessary earth linking connections with all material, labour tools & tackles as directed by Engineer-In-charge.

23. Technical specification no 23 for Item No. 23

The Contractor shall have to do the entire work of earth pits required for equipment earthing and for the pits at the corners of earth mat.

STANDARDS

The product and the equipment covered by this specification shall, unless otherwise specified be in line with the requirement of any of the latest applicable standards and will apply in order of priority as listed below:-

a) Indian Standards

b) IEEE 80

c) ANSI (American National Standards)

d) BS (British Standards)

EARTH PITS

All the Earth Pit shall be with special Ground electrodes supplied by Reputed Manufacturer. These special electrodes are provided with Ground enhancement material.

PIPE or PIP (Pipe-In-Pipe) or Flat-In-Pipe ELECTRODE for 11KV Substations: -

The Pipe or Pipe-In-Pipe or Flat-In-Pipe electrode shall have a nominal (actual) outer dia. of 50 mm & 2.5 mm thickness (Min.) and length of 3 M (Min.). It shall be capable of handling 25 KA 1-Sec Short time current and shall have a molecular bonding of 250 micron of copper as per international standards.

Diameter	50 mm
Length of Rod	3 meter
Size of Conductor	(40x 6)mm

In case of P-I-P and Flat-In-Pipe, the portion between pipes shall be filled with the conductive material.

- Type test report (tested at NABL accredited laboratory) shall be submitted satisfying minimum STC of 25 KA-1Sec for 11 KV S/S

- Test report (tested at NABL accredited laboratory) of cu-coating shall be submitted satisfying our requirement of 250 micron coating.

GROUND ENHANCEMENT MATERIAL/ BACK FILL / GROUNDING COMPOUND

Ground Enhancement Material/ Backfill / Grounding compound shall be permanent and maintenance free. (No re- charging with salts or any other chemicals) and shall maintain its earth resistance with time.

Ground Enhancement Material/ Backfill / Grounding compound shall confirm IEEE 80-2000 Clause No.14.5 (d). Ground Enhancement Material/ Backfill / Grounding compound in its set form shall have a resistivity of not more than 0.12 ohm-m.

Ground Enhancement Material / Backfill / Grounding compound shall comply the requirements and all applicable tests as per part-7 of IEC 62561. The same shall be tested at NABL accredited laboratory and reports are to be verified at site.

Resistivity test using soil box

Leaching test

Sulphur determination

Corrosion test

It must set up firmly and not dissolve or decompose or otherwise pollute the soil or the local water table.

It shall be suitable for use in dry form or slurry form.

The Ground Enhancement Material/ Backfill / Grounding compound shall not depend on the continuous presence of water to maintain its conductivity.

The material shall be carbon based conductive concrete and shall not contain bentonite in any form.

Same shall be applicable for conductive material used for filling in case of P-I-P and Flat-In-Pipe type earth electrodes.

CLAMP

Each Earth Rod/Pipe/PIP must be provided with a suitable Cu plated clamp OR exothermic welding of Cu plated plate to facilitate Interconnection of rods and connection to Equipment Earth Bar using appropriate copper coated MS strip.

Earthing Pit

- Specially designed for earthing Inspection.
- Durable mild FRP cover and body.
- Square top to aid block pavior cutting.
- Giving a neat edge design. Circular
- Clear opening to fit inspection chambers.
- Solid tray base plate.

The product shall be guaranteed for trouble free operation. Any defect discovered during this period shall be rectified free of charge. The pits shall be drawn with the help of a boring machine, an auger

or any other means as required by site conditions and nature of ground strata which shall be in the scope of supplier.

A cement concrete (ratio 1:4:8) chamber of at least 30 cm x 30 cm shall be provided just below the surface of ground over the funnel for watering and having RCC/CI cover of suitable size as directed. The pit shall be filled with alternative layer of 15cm each of charcoal and salt. This also includes removal of extra-excavated earth from the site. The work shall be carried out to entire satisfaction of Engineer-in-charge. This work includes all labour and material as directed by Engineer-in-charge.

24. <u>Technical specification no 24 for Item No. 24</u>

a. This item includes supply at site, laying, fixing and connection of GI strip of size 40x6 mm from earth station to Feeder Pillar as directed. The GI strip shall be laid and clamped suitably on wall/floor/structure or buried in the ground as directed. This work includes all material, labour, tools & tackles as directed by Engineer-In-Charge.

25. <u>Technical specification no 25 for Item No. 25</u>

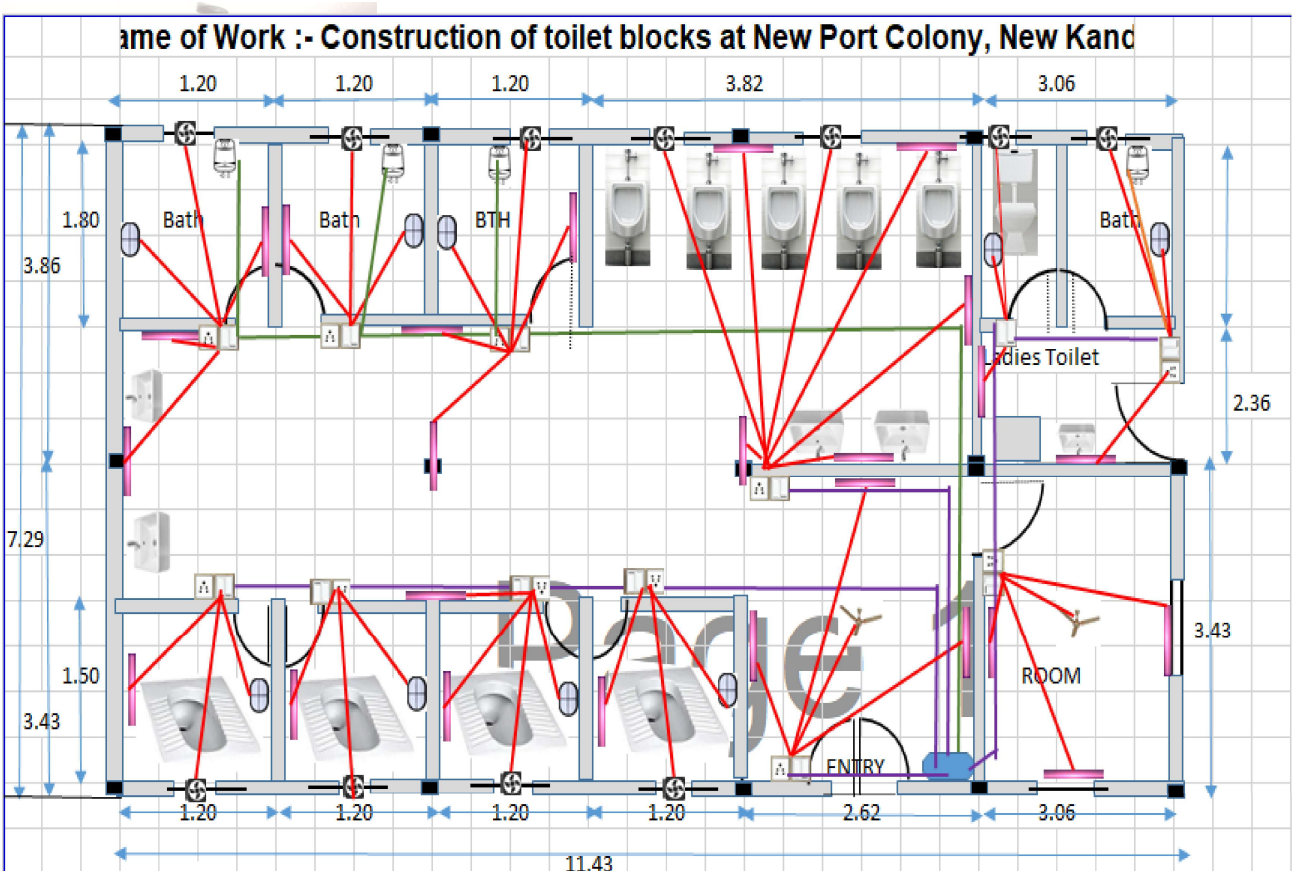
This includes supply at site, laying, fixing and connecting of G.I wire of size 8 SWG from earth station/existing earthing system to Junction Boxes/Distribution Boards/lighting accessories etc. as directed. The G.I wire also shall be laid from earth station to Junction Boxes/Distribution Boards/lighting accessories etc. directly connected to two separate and distinct main earth as directed and shall be clamped suitably on wall/floor or buried in the ground / pucca trench as directed. The work includes all material & labour required shall be done as directed by Engineer-in-charge.

---SD--

Signature & Seal of Contractor

Executive Engineer (E)
Deendayal Port Authority

Fig no 1



Signature & Seal of Contractor

---SD--
Executive Engineer (E)
Deendayal Port Authority